

# HPLC COLUMN SELECTION TREE

Sample MW	Sample Solubility	Separation Mode	Our Recommended Column	Page	
MW < 2000	Organic-Soluble	Hexane-Soluble	Normal Phase Adsorption	Luna Silica(2) 158 Onyx Silica 185	
			Normal Phase Bonded	Luna CN, NH <sub>2</sub> 158	
		Methanol Methanol/H <sub>2</sub> O Soluble	Reversed Phase Bonded	Synergi Max-RP, Fusion-RP 237 Luna C8(2), C18(2) 158 Gemini C18 126	
		THF-Soluble	Gel Permeation GPC	Phenogel 50 Å, 100 Å 192 Shodex GPC 220	
	Aqueous-Soluble	Non ionic	Reversed Phase	Synergi Polar-RP, Fusion-RP 237 Luna C8(2), C18(2) 158 Gemini C18 126 Onyx C8, C18 185	
			Ionic	Reversed Phase Ion Pairing/Suppression	Synergi Max-RP, Hydro-RP 237 Luna C8(2), C18(2) 158 Gemini C18 126 Onyx C8, C18 185
		Ion-Exchange		Luna SCX, NH <sub>2</sub> 158 PhenoSphere SAX 200	
		Peptides	Reversed Phase	Jupiter Proteo 143 PolymerX RP-1 203 Onyx C18 185	
		MW > 2000	Organic-Soluble	Gel Permeation Chromatography (GPC)	Unknown MW Range
	Known MW Range				Specific Pore: Phenogel 192 Shodex GPC 220
Aqueous-Soluble	Gel Filtration Aqueous GFC/SEC		pH 2-7.5	BioSep-SEC-S Series 95 Shodex OHPak 220	
			pH > 7.5	PolySep-GFC-P 204	
	Ion-Exchange		Cation-Exchange	Shodex IEC CM-825 220	
			Anion-Exchange	Shodex IEC DEAE 220	
	Reversed Phase		pH 2-10	Jupiter 300 C4, C5, C18 143	
pH > 10			PolymerX RP-1 203 Hamilton PRP-3 132		
Hydrophobic Interaction (HIC)	Shodex HIC 220				
Affinity/Bioaffinity	Shodex AFpak 220				

# HPLC COLUMN SELECTION BY APPLICATION

This table is to aid you in selecting the right column for your application. For application notes or method development assistance please call your technical representative.

<b>Amino Acids</b>	<b>Page</b>	<b>Organic Acids</b>	<b>Page</b>
Phenomenex EZ:faast (GC and LC/MS)	307	Phenomenex Synergi Hydro-RP	237
Phenomenex Chirex (chiral)	108	Phenomenex Rezex	210
<b>Anions</b>		<b>Peptides/Proteins</b>	
Phenomenex STAR-ION A300	232	Phenomenex Jupiter 300/Jupiter Proteo	143
Phenomenex PhenoSphere SAX	200	Phenomenex Luna SCX, NH <sub>2</sub>	158
Phenomenex Luna NH <sub>2</sub>	158	Phenomenex BioSep-SEC-S	95
Hamilton PRP	132	Phenomenex PolySep-GFC-P	204
Shodex IC	220	Phenomenex Aqua 200 Å	91
<b>Antibiotics</b>		<b>Pesticides, Herbicides, and Dioxins</b>	
Phenomenex Gemini	126	Phenomenex Gemini	126
Phenomenex Luna	158	Phenomenex Synergi	237
Phenomenex Synergi	237	Phenomenex Luna	158
<b>Biotechnology/Life Sciences</b>		Phenomenex Onyx	185
Phenomenex Clarity	300	Phenomenex EnviroSep-PP	124
Phenomenex Jupiter 300/Jupiter Proteo	143	Phenomenex Zebbron (GC)	23
Phenomenex Onyx	185	<b>Pharmaceuticals</b>	
Phenomenex BioSep-SEC-S	95	Phenomenex Gemini	126
Phenomenex PolySep-GFC-P	204	Phenomenex Synergi	237
Phenomenex Luna SCX	158	Phenomenex Luna	158
Phenomenex Luna NH <sub>2</sub>	158	Phenomenex Onyx	185
Shodex GFC, KW, AFpak	220	Phenomenex Chirex (chiral)	108
<b>Carbohydrates</b>		Nomura Chemical Develosil-UG series	120
Phenomenex Luna NH <sub>2</sub>	158	Shiseido Capcell Pak UG and MF-Pak series	102
Phenomenex Rezex	210	<b>Polymers, Plastics, Rubber</b>	
Shodex Sugar	220	Phenomenex Zebbron (GC)	23
<b>Cations</b>		Phenomenex Phenogel	192
Phenomenex Luna SCX	158	Shodex Asahipak GF	92
Hamilton PRP	132	Shodex GPC	220
<b>Enantiomers (Chiral)</b>		<b>Vitamins</b>	
Phenomenex Chirex	108	Phenomenex Gemini	126
Macherey-Nagel Nucleodex	184	Phenomenex Synergi	237
Shiseido Chiral CD-Ph	107	Phenomenex Luna	158
<b>Environmental (Carbamates, PAH's, Explosives)</b>		Phenomenex Onyx	185
Phenomenex EnviroSep	124	<b>Taxanes</b>	
Phenomenex Gemini	126	Phenomenex Curosil	119
Phenomenex Luna	158	<b>Textiles/Dyes</b>	
Phenomenex Synergi	237	Phenomenex Gemini	126
Phenomenex Curosil	119	Phenomenex Synergi	237
Phenomenex Zebbron (GC)	23	Phenomenex Luna	158
<b>Foods, Flavors and Fragrances</b>		Phenomenex Phenogel GPC	192
Phenomenex Rezex	210		
Phenomenex Gemini	126		
Phenomenex Luna	158		
Phenomenex Onyx	185		
Phenomenex Synergi	237		
Phenomenex Zebbron (GC)	23		
<b>Nucleosides and Nucleotides</b>			
Phenomenex Clarity	300		
Phenomenex Gemini C18	126		
Phenomenex Luna NH <sub>2</sub> , SCX	158		
Phenomenex Synergi Polar-RP	237		
Phenomenex PhenoSphere SAX	200		
Shodex IEC	220		

# HPLC COLUMN SELECTION BY MANUFACTURER

In recognizing the tremendous difficulty the chromatographer has in choosing from literally hundreds of columns and to aid in your selection of alternative materials from different manufacturers, an HPLC column selection guide is presented below.

This selection is, neither in terms of manufacturers nor in terms of their products, a complete list, and the accuracy of the data is not guaranteed.

Column	Phenomenex Alternative*	Phenomenex Recommended Alternative**
<b>Agilent Technologies (HP)</b>		
Poroshell	—	Jupiter 300
Zorbax Eclipse-XDB	Luna (2)	Synergi
Zorbax Rapid Resolution HT	Luna HST	Synergi 2.5 µm
Zorbax PrepHT	Luna 10 µm	Luna 10 µm PREP
Zorbax Rx	PhenoSphere NEXT	Luna (2)
Zorbax SB 80 Å	Capcell Pak UG 80 Å	Luna (2)
Zorbax SB 300 Å	Capcell Pak UG 300 Å	Jupiter 300
Zorbax SB Aq	Synergi Hydro-RP	Synergi Hydro-RP
Zorbax GF (BioSeries)	BioSep SEC-S	BioSep SEC-S
Zorbax Extend-C18	Gemini C18	Gemini C18
Zorbax 300 Extend	Jupiter 300	Jupiter 300
Zorbax Bonus RP	Synergi Fusion-RP	Synergi Hydro-RP
Zorbax Oligo	Clarity Oligo-RP	Clarity Oligo-RP
Zorbax Carbohydrate	Luna NH <sub>2</sub>	Luna NH <sub>2</sub>
<b>Alltech/Vydac/Jones/Grom (Grace Davison Discovery Sciences)</b>		
Adsorbosphere	Luna (2)	Synergi Max-RP
Adsorbosphere HS	Ultrasorb ODS (20)	Luna (2)
Adsorbosphere XL	Luna (2)	Synergi Max-RP
Adsorbosphere XL 300	Jupiter 300	Jupiter 300
Allsphere	SphereClone	Synergi Hydro-RP
Alltima	Luna (2)	Gemini C18
Alltima AQ	Synergi Hydro-RP	Synergi Fusion-RP
Alltima Phenyl	Luna Phenyl-Hexyl	Synergi Polar-RP
Alphabond	Bondclone	Synergi Hydro-RP
Apollo	Luna (2)	Synergi Max-RP
Brava	HyperClone	Luna
Carbohydrate	Rezex	Rezex
Chirobiotic	—	Chirex
Econosphere	Econosphere (Inquire)	Synergi Hydro-RP
Macrosphere GPC	BioSep SEC-S	Shodex
Macrosphere 300	Jupiter	Jupiter
Platinum/Platinum EPS100 Å	Synergi Hydro-RP	Synergi Fusion-RP
Prevail	Luna (2)	Synergi Max-RP
Prosphere 300	Jupiter 300	Jupiter 300
Denali	Luna C18(2)	Gemini C18
Everest	Jupiter 300	—
Venture	—	Shodex AFpak
Vydac 202TP (PAH)	EnviroSep PP	Synergi Hydro-RP
Vydac 228 TP	Jupiter 300 C18	PrimeSphere C18-MC
Vydac 259VHP	—	Hamilton PRP-3
Vydac 238TP (C8, C18)	—	Jupiter 300
Vydac 300/301VHP	—	Shodex IEC
Vydac 201TP	Cosmosil C18-AR	Jupiter 300 C18
Vydac 201/208SP	Prodigy (3)	Luna (2)
Vydac 218TP/218MS/238MS	Jupiter 300 C18	Jupiter 300 C18
Vydac 214TP/214MS	Jupiter 300 C4	Jupiter 300 C5
Vydac 208TP	Selectosil C8 300 Å	Jupiter 300 C5
Genesis 300	Jupiter 300	Jupiter 300
Genesis	Luna (2)	Gemini
Genesis AQ	Synergi Hydro-RP	Synergi Fusion-RP
Apex	Luna (2)	Synergi Max-RP

Column	Phenomenex Alternative*	Phenomenex Recommended Alternative**
<b>Bio-Rad</b>		
Aminex	Rezex	Rezex
Bio-Sil SEC	BioSep-SEC-S	Shodex Protein KW
Bio-Silect	BioSep PEEK	—
Bio-Sil C18	Luna C18(2)	Synergi Max-RP
Bio-Sil Rex	—	Shodex IEC
Hi-Pore	Jupiter 300	Jupiter 300
Macro-Prep	—	Shodex IEC
UNOsphere	—	Shodex IEC
<b>Chiral Technologies/Daice Chemical</b>		
Chiracel	—	Chirex
Chiralpak	—	Chirex
Crownpak	—	Nucleodex
<b>Dionex</b>		
Acclaim 120	Luna	Gemini
Acclaim 300	Jupiter	Jupiter
Acclaim PA	Synergi Fusion-RP	Synergi Hydro-RP
Acclaim PA 2	Synergi Fusion-RP	Gemini C18
Acclaim OA	Synergi Hydro-RP	Synergi Fusion-RP
Acclaim Surfactant	—	Gemini
AminoPac PA	—	Asahipak IEC/ES
CarboPac (MA, PA)	—	Rezex
ProPac	—	Shodex IEC
OmniPac	—	Luna SCX
DNAPac	Asahipak IEC	Luna NH <sub>2</sub>
Ionpac AS series	STAR-ION A300	Shodex IC series
Ionpac CS series	Shodex IC series	Hamilton PRP-X200
IonPac ICE AS series	Rezex ROA	Rezex ROA
<b>E.S. Industries</b>		
Aquasep	Synergi Fusion-RP	Synergi Hydro-RP
Chromegabond	Nucleosil	Luna (2)
Chromegabond HC	Ultrasorb ODS (30)	Synergi Hydro-RP
Chromegabond BAS	Synergi Fusion-RP	Synergi Hydro-RP
Chromegabond WR	Luna (2)	Gemini
Protec-RP	Synergi Fusion-RP	Synergi Hydro-RP
FluoroSep-RP Phenyl	Curosil PFP	Luna Phenyl-Hexyl
FluoroSep-RP Octyl	—	Luna C8(2)
FluoroSep-RP Propyl	—	Jupiter 300 C5
Gammabond C1	PhenoSphere C1	Develosil TMS-UG (C1)
Gammabond C8, C18	—	Luna C8(2), C18(2)
Gammabond PVP	—	Asahipak ODS-50
Gammabond SCX	—	Shodex IEC CM-825
Gammabond WCX	—	Asahipak ES-502C 7C
<b>G.L. Sciences</b>		
Inertsil ODS-Prep-100 Å	Prodigy 10 µm ODS-Prep-100 Å	Synergi Max-RP
Inertsil (2)	Prodigy (2)	Luna (2)
Inertsil (3)	Prodigy (3)	Luna (2)
Inertsil 300 Å WP300 C8	Jupiter C5	Jupiter C5
Bioptic AV-1	—	Chirex 3002

\*Alternative - This category indicates an alternative column which will likely give a similar selectivity.  
 \*\*Recommended Alternative - This category indicates an alternative column which may yield somewhat different selectivity but may also lead to improved resolution.

# HPLC COLUMN SELECTION BY MANUFACTURER

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Column	Phenomenex Alternative*	Phenomenex Recommended Alternative**	Column	Phenomenex Alternative*	Phenomenex Recommended Alternative**
<b>MacMod/Bischoff/ACT</b>			<b>Thermo Electron Corporation</b>		
ProntoSIL 120 Å	Luna C18(2)	Gemini C18	Aquasil	Synergi Hydro-RP	Develosil ODS-MG
ProntoSIL 300 Å	Jupiter 300	Jupiter 300	BETASIL	Prodigy (3)	Luna (2)
ProntoSIL Aq 120 Å	Synergi Hydro-RP	Develosil RP-Aqueous(C30)	BetaMax	Luna (2)	Gemini
ProntoSIL Aq PLUS	Synergi Hydro-RP	Synergi Fusion-RP	BETASIL Phenyl-Hexyl	Luna Phenyl-Hexyl	Synergi Polar-RP
ProntoSIL SH 120 Å	Gemini C18	Luna C18(2)	BetaBasic	PhenoSphere NEXT	Luna (2)
ProntoSIL ACE-EPS	Synergi Hydro-RP	Aqua 200 Å	BioBasic SEC	BioSep SEC	BioSep SEC
ProntoSIL Chiral AX	—	Chirex	BioBasic IEX	—	Shodex IEC
ProntoSIL C30	Develosil C30	Luna Phenyl-Hexyl	BioBasic RP	Jupiter 300	Jupiter 300
Mac-Mod ACE	Gemini C18	Luna C18(2)	Carbamate	Synergi Fusion-RP	Synergi Hydro-RP
Mac-Mod Hydrobond	Synergi Fusion-RP	Synergi Hydro-RP	Deltabond	Luna C18(2)	Synergi Max-RP
Mac-Mod ACE-AQ	Develosil RP-Aqueous	Synergi Hydro-RP	Hypersil GOLD	Luna (2)	Gemini
Mac-Mod ACE-300 Å	Jupiter 300	Jupiter 300	Hypersil Green	EnviroSep PP	Synergi Hydro-RP
<b>Polymer Labs</b>			Hypersil	HyperClone	Synergi Max-RP
PLgel	Phenogel	—	HyPURITY	Luna (2)	Synergi Max-RP
PlusPore	Phenogel	Phenogel	HyPURITY ADVANCE	Synergi Fusion-RP	Synergi Hydro-RP
PLRP-S	PolymerX RP-1	Gemini C18	HyPURITY AQUASTAR	Synergi Fusion-RP	Synergi Hydro-RP
PLRP-S 300 Å	Hamilton PRP-3	Jupiter 300 C18	Hypercarb	—	Gemini
PL Hi-PLEX	Rezex	—	Prism RP	Synergi Hydro-RP	Synergi Max-RP
PL-Aquagel-OH	PolySep GFC-P	Shodex OHPak SB-800H	Fluophase	Curosil PFP	Luna Phenyl Hexyl
<b>Restek</b>			<b>Varian</b>		
Allure	Ultracarb ODS (30)	Luna (2)	MetaChiral	Chirex	—
Pinnacle DB	HyperClone	Luna (2)	MetaSil AQ C18 120A, 200 Å	Aqua C18 125A, 200 Å	Synergi Hydro-RP
Pinnacle Ultra C18	Ultracarb ODS (20)	Luna (2)	MetaSil	Prodigy	Luna (2)
Pinnacle II	HyperClone BDS	Luna (2)	Taxsil (1, 2, 3)	Curosil	—
Allure Acidix	Develosil ODS-UG	Luna (2)	Metacarb	—	Rezex
Allure Basix	Synergi Hydro-RP	Gemini C18	Polaris C18 Amide, C8 Ether	Synergi Fusion-RP	Synergi Hydro-RP
Ultra Aqueous	Synergi Hydro-RP	Synergi Fusion-RP	Polaris	Luna (2)	Synergi
Ultra	—	Luna (2)	Microsorb	Luna	Synergi
<b>Supelco</b>			Microsorb 300 Å	Jupiter 300	Jupiter 300
Ascentis	Synergi	Gemini C18			
Supelcosil LC	PhenoSphere NEXT	Synergi Hydro-RP			
Supelcosil LC-DB	HyperClone BDS	Synergi Hydro-RP			
Supelco LC-PAH	EnviroSep PP	Synergi Hydro-RP			
Supelcogel	Rezex	—			
Supelco ABZ, ABZ+	Luna C8(2)	Luna C18(2)			
Suplex pKb-100	—	Luna C8(2)			
Supelco LC-F	Curosil PFP	Synergi Polar-RP			
Hisep	Capcell Pak MF	Asahipak GS-320			
Supelco LC-18-T	Prodigy (3)	Luna C18 (2)			
Discovery Bio	Jupiter 300	Jupiter 300			
Discovery HSF5	Curosil PFP	Synergi Polar-RP			
Discovery HSC18	Luna C18(2)	Gemini C18			
Discovery C18	Luna	Gemini C18			
Discovery HS PEG	Nucleosil Diol	—			
Discovery RP C16 Amide	Synergi Fusion-RP	Synergi Fusion-RP			
Supelco LC-18-S	Prodigy (3)	Luna C18(2)			
Discovery (C18, C16)	Synergi Hydro-RP	Luna (2)			
Supelcogel ODP-50	Asahipak ODP-50	Luna C18(2)			
Supelcosil LC-NH <sub>2</sub> -NP	Selectosil NH <sub>2</sub>	Luna NH <sub>2</sub>			
Supelcosil LC-PCN	Luna CN, Capcell UG-CN	Develosil CN-UG			
Supelcosil LC-SAX	PhenoSphere SAX	—			
Supelcosil LC-SCX	PhenoSphere SCX	Luna SCX			
Supelcosil LC-304/308/318	Jupiter 300	Jupiter 300			

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# HPLC COLUMN SELECTION BY MANUFACTURER

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Column	Phenomenex Alternative*	Phenomenex Recommended Alternative**	Column	Phenomenex Alternative*	Phenomenex Recommended Alternative**
<b>Waters</b>			<b>YMC</b>		
Atlantis	Synergi Fusion-RP	Synergi Hydro-RP	ODS-AL	Luna C18 (2)	Synergi Max-RP
Spherisorb	SphereClone	Synergi Hydro-RP	ODS-AM	Luna C18 (2)	Synergi Max-RP
μBondapak	Bondclone	Synergi Hydro-RP	Carbamate	EnviroSep-CM	Synergi Hydro-RP
μPorasil	Bondclone Silica	Luna Silica	Carotenoid	Develosil C30	Ultrapak ODS(30)
Deltapak 100A	PrimeSphere	Luna	Fuel Analysis	Ultrapak ODS (30)	—
Deltapak 300A	Jupiter 300	Jupiter 300	Pack 120A	Luna (2)	Synergi
Novapak 4 μm	—	Synergi Hydro-RP	Pack 300A	Jupiter 300	Jupiter 300
Resolve	PhenoSphere	Luna	Pack CN (Cyano)	Luna CN (Cyano)	Capcell Pak CN-UG
Symmetry C18, C8	Luna C18(2), C8(2)	Synergi Max-RP	Pack Diol S	BioSep-SEC-S	Shodex Protein KW-800
Symmetry Shield C18, C8	Synergi Fusion-RP	Synergi Hydro-RP	Pack NH <sub>2</sub>	—	Luna NH <sub>2</sub>
Styragel	Phenogel 20 μm	—	Pack Phenyl	Luna Phenyl-Hexyl	Synergi Polar-RP
μStyragel	Phenogel 10 μm	—	Pack PRO-C18	Luna C18 (2)	Luna C18 (2)
UltraStyragel	Phenogel 5 μm	—	Pack Protein-RP	Jupiter 300	Jupiter 300
Envirogel	EnviroSep ABC	—	PVA-Sil	Luna Silica (2)	Shodex OH-Pak Q800
Ultrahydrogel	PolySep-GFC-P	Shodex OHPak SB	Pack SEC-DVB	Phenogel	Shodex GPC KF
Protein-Pak IEC	Shodex IEC	—	Polymeric C18	PolymerX RP-1	Luna C18 (2)
Protein-Pak Affinity	Shodex AFPak	—	TMS (C1)	Develosil TMS-UG (C1)	PhenoSphere C1
Protein-Pak SW	BioSep-SEC-S	Shodex Protein KW	ODS-AQ	Aqua	Synergi Hydro-RP
BioSuite IEX	Shodex IEC	—	YMC Basic	Luna C8(2)	Synergi Max-RP
BioSuite SEC	BioSep SEC	Shodex Protein KW	J'sphere	PrimeSphere-HC	Luna C18 (2)
BioSuite RPC	—	Jupiter 300	YMC Chiral	Chirex	—
Carbohydrate	PhenoSphere NH <sub>2</sub>	Luna NH <sub>2</sub>	Explosives	Ultrapak 5μm ODS(20)	Synergi Hydro-RP
Sugar-pak	Rezex	Shodex Sugar	PRO C4, C8, C18	Develosil UG	Luna (2)
IC-pak	Hamilton PRP-X100	STAR-ION A300	Hydrosphere	Synergi Hydro-RP	Synergi Hydro-RP
Carbamate	EnviroSep CM	Synergi Hydro-RP			
XTerra MS	Gemini	Luna			
XTerra RP	Gemini	Synergi Fusion-RP			
Acquity BEH	—	Luna HST			
SunFire	Luna	Gemini			
XBridge	Gemini C18	Synergi Max-RP			

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 \*\*Recommended Alternative - This category indicates an alternative column which may yield somewhat different selectivity but may also lead to improved resolution.

# HPLC COLUMN SELECTION BY SEPARATION MODE

This table is to aid you in selecting the right column from Phenomenex for the separation mode you desire. For specific application notes or method development assistance please call your Phenomenex technical consultant.

Separation Mode	Page	Separation Mode	Page
<b>Adsorption Chromatography</b>		<b>Ligand Exchange Chromatography</b>	
Phenomenex Luna Silica	158	Phenomenex Rezex	210
Phenomenex Onyx Silica	185	Shodex Sugar	225
<b>Affinity Chromatography</b>		<b>Multi-Mode Chromatography</b>	
Shodex AFpak	225	Shodex Asahipak GS	92
Tosoh Bioscience TSKgel	250	Shiseido Capcell MF	102
<b>Chiral Chromatography</b>		Whatman Partisil	191, 266
Phenomenex Chirex	108	<b>Normal Phase Chromatography</b>	
Hypersil Hypercarb	140	Phenomenex Luna CN, NH <sub>2</sub> , Silica	158
Kromasil CHI	155	Phenomenex Onyx Silica	185
Macherey-Nagel Nucleosil Chiral, Nucleodex, Resolvosil	184	Phenomenex Prodigy	206
Merck ChiraDex	179	Beckman Coulter Ultrasphere	264
Regis Whelk-O 1	179	Eka Chemicals Kromasil	153
Shinwa Ultron ES	272	Merck KGaA LiChrosorb, LiChrospher	156, 157, 177, 178, 179
Shiseido Ceraspher and Chiral CD-Ph	107	Agilent Technologies Zorbax	269
Shodex ORpak	228	Hypersil	138
Sumika Sumichiral OA	234	Macherey-Nagel Nucleosil	181
<b>Gel Filtration Chromatography</b>		Nomura Chemical Develosil	120
Phenomenex BioSep SEC/GFC (silica)	95	Shodex Asahipak	92
Phenomenex PolySep GFC-P (polymer)	204	Tosoh Bioscience TSKgel	250
Asahipak GF and GS	92	Whatman Partisil, PartiSphere	191, 266
Shodex GFC OHpak SB, Sugar KS, Protein KW	220	<b>Partition and Adsorption Chromatography</b>	
Tosoh Bioscience TSKgel	250	Shodex Sugar	225
<b>Gel Permeation Chromatography</b>		<b>Reversed Phase Chromatography</b>	
Phenomenex Phenogel	192	Phenomenex Bondclone	100
Polymer Labs PLgel, PLRP-S	202	Phenomenex Curosil	119
Shodex Asahipak GF	92	Phenomenex EnviroSep	124
Shodex GPC K, KF, KD, HFIP, HT, UT	220	Phenomenex Gemini	126
Tosoh Bioscience TSKgel	250	Phenomenex HyperClone	134
<b>Hydrophobic Interaction Chromatography</b>		Phenomenex Jupiter	143
Phenomenex Jupiter	143	Phenomenex Luna	158
Shodex HIC	225	Phenomenex Onyx	185
Agilent Technologies Zorbax StableBond	270	Phenomenex PhenoSphere-NEXT	201
Macherey-Nagel Nucleosil	181	Phenomenex PolymerX	203
Grace Davison Discovery Sciences Vydac	265	Phenomenex Prodigy	206
Tosoh Bioscience TSKgel	250	Phenomenex SphereClone	229
<b>Ion-Exclusion Chromatography</b>		Phenomenex Synergi Fusion-RP	237
Phenomenex Rezex	210	Phenomenex Synergi Hydro-RP	237
Shodex RSpak, SUGAR	225	Phenomenex Synergi Max-RP	237
<b>Ion-Exchange Chromatography</b>		Phenomenex Synergi Polar-RP	237
Phenomenex Luna SCX, Luna NH <sub>2</sub>	158	Beckman Coulter Ultrasphere	264
Phenomenex PhenoSphere SAX	200	Eka Chemicals Kromasil	153
Phenomenex Rezex	210	G.L. Sciences Inertsil	142
Hamilton HC, RCX	132	Hamilton PRP	132
Macherey-Nagel Nucleosil SAX, SCX	181	Agilent Technologies Zorbax Stablebond, Rx, XDB	269
Shodex Asahipak ES	92	Hypersil ODS, BDS	138, 139
Shodex IEC, AXpak	225	Macherey-Nagel Nucleosil	181
Shodex RSpak	225	Merck KGaA LiChrosorb, LiChrospher, Superspher	156, 157, 177, 178, 179
Shodex Sugar	225	Nacalai Tesque Cosmosil	117
Shiseido Capcell UG-SCX	102	Nomura Chemical Develosil UG series	120
Tosoh Bioscience TSKgel	250	Shodex Asahipak ODP, C8P, C4P	92
Whatman Partisil, PartiSphere SAX, SCX, PAC	191, 266	Shodex RSpak	227
<b>Ion Chromatography</b>		Shiseido Capcell AG, SG, UG, MG, ACR, AQ	102
Phenomenex STAR-ION A300	232	Tosoh Bioscience TSKgel	250
Hamilton PRP	132	Waters Spherisorb	231
Shodex IC	226	Whatman Partisil, PartiSphere	191, 266
		Grace Davison Discovery Sciences Vydac	265

# HPLC COLUMN SELECTION BY USP LISTING

For each USP column specification, you will find listed the most suitable Phenomenex column.

It is widely understood that all HPLC packings are not alike, and no single column can perform a myriad of desired separations. HPLC packings differ in hydrophobicity, surface coverage, surface area, pore size and particle shape.

*The USP does give chromatographers the flexibility to make adjustments to Monographs. As you can read below, column manufacturers or sources and materials stated in USP Monographs are only recommendations. Chromatographers can and should change and adapt the Monograph's specifications to yield the most satisfactory analytical results.*

USP Column Classification	Recommended Phenomenex Column	Particle Shape	Page
L1 Octadecyl silane chemically bonded to porous silica or ceramic microparticles, 1.5 to 10 µm in diameter, or a monolithic rod.	Luna C18(2)	Spherical	158
	Luna C18(2)-HST	Spherical	277
	Gemini C18	Spherical	126
	Synergi Hydro-RP	Spherical	237
	Onyx C18	Monolith	185
L2 Octadecyl silane chemically bonded to silica gel of a controlled surface porosity that has been bonded to a solid spherical core, 30 to 50 µm in diameter.			
L3 Porous silica particles, 5 to 10 µm in diameter.	Luna Silica(2)	Spherical	158
	Onyx Si	Monolith	185
L4 Silica gel of controlled surface porosity bonded to a solid spherical core, 30 to 50 µm in diameter.			
L5 Alumina of controlled surface porosity bonded to a solid spherical core, 30 to 50 µm in diameter.			
L6 Strong cation-exchange packing: sulfonated fluorocarbon polymer coated on a solid spherical core, 30 to 50 µm in diameter.			
L7 Octyl silane chemically bonded to totally porous silica particles, 1.5 to 10 µm in diameter.	Luna C8(2)	Spherical	158
	Onyx C8	Monolith	185
L8 An essentially monomolecular layer of aminopropyl-silane chemically bonded to totally porous silica gel support, 3 to 10 µm in diameter.	Luna 10 µm NH <sub>2</sub>	Spherical	158
L9 Irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter.	Partisil 10 µm SCX	Irregular	191, 266
	Luna 10 µm SCX	Spherical	158
L10 Nitrile groups chemically bonded to porous silica particles, 3 to 10 µm in diameter.	Luna CN 100 Å	Spherical	158
	Capcell CN UG	Spherical	102
L11 Phenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter.	Synergi Polar-RP	Spherical	237
	Luna Phenyl-Hexyl	Spherical	158
	Gemini C6-Phenyl	Spherical	126
	Prodigy PH-3	Spherical	206
L12 Strong anion-exchange packing made by chemically bonding a quaternary amine to a solid silica spherical core, 30 to 50 µm in diameter			
L13 Trimethylsilane chemically bonded to porous silica particles, 3 to 10 µm in diameter.	Develosil TMS-UG (C1) 130 Å	Spherical	120
	TSKgel TMS-250	Spherical	250
L14 Silica gel having a chemically bonded, strongly basic quaternary ammonium anion-exchange coating, 5 to 10 µm in diameter.	Partisil 10 µm SAX	Irregular	191, 266
	PartiSphere 5 µm SAX	Spherical	267
L15 Hexyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.	PhenoSphere C6	Spherical	200
L16 Dimethyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter.	Maxsil RP2 60 Å	Irregular	176
L17 Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 7 to 11 µm in diameter.	Rezex RHM Monosaccharide	Spherical	210
	Rezex ROA	Spherical	210
L18 Amino and cyano groups chemically bonded to porous silica particles, 3 to 10 µm in diameter.	Partisil PAC	Irregular	191, 266
L19 Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the calcium form, 9 µm in diameter.	Rezex RCM	Spherical	210
	Rezex RCU	Spherical	210
L20 Dihydroxypropane groups chemically bonded to porous silica particles, 5 to 10 µm in diameter.	Shodex PROTEIN KW-800 series	Spherical	224
	TSKgel QC-PAK 200 and 300	Spherical	254
L21 A rigid, spherical styrene-divinylbenzene copolymer, 5 to 10 µm in diameter.	PolymerX RP-1	Spherical	203
	Phenogel 100 Å	Spherical	192
	Rezex ROA	Spherical	210
L22 A cation exchange resin made of porous polystyrene gel with sulfonic acid groups, about 10 µm in size.			
L23 An anion exchange resin made of porous polymethacrylate or polyacrylate gel with quaternary ammonium groups, about 10 µm in size.	Shodex IEC QA-825	Spherical	225
	TSKgel BioAssist Q	Spherical	257
	TSKgel SuperQ-5PW	Spherical	257
L24 A semi-rigid hydrophilic gel consisting of vinyl polymers with numerous hydroxyl groups on the matrix surface, 32 to 63 µm in diameter.			
L25 Packing having the capacity to separate compounds with a MW range from 100 to 5000 daltons (as determined by polyethylene oxide), applied to neutral, anionic, and cationic water-soluble polymers. A polymethacrylate resin base, crosslinked with poly-hydroxylated ether (surface contained some residual carboxyl functional groups) was found suitable.	PolySep-GFC-P2000	Spherical	204
	Shodex OHpak SB-802.5HQ	Spherical	224
L26 Butyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter.	Jupiter 300 C4	Spherical	143
L27 Porous silica particles, 30 to 50 µm in diameter.	Sepra	Irregular	297
L28 A multifunctional support, which consists of a high purity, 100 Å, spherical silica substrate that has been bonded with anionic (amine) functionality in addition to a conventional reversed phase C8 functionality.			
L29 Gamma alumina, reversed phase, low carbon percentage by weight, alumina-based polybutadiene spherical particles, 5 µm diameter with a pore diameter of 80 Å.			
L30 Ethyl silane chemically bonded to a totally porous silica particle, 3 to 10 µm in diameter.	Maxsil RP2 60 Å	Irregular	176



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<b>L31</b> A strong anion-exchange resin-quaternary amine bonded on latex particles attached to a core of 8.5 µm macroporous particles having a pore size of 2000 Å and consisting of ethylvinylbenzene cross-linked with 55 % divinyl benzene.			
<b>L32</b> A chiral ligand-exchange packing- L-proline copper complex covalently bonded to irregularly shaped silica particles, 5 to 10 µm in diameter.	Nucleosil Chiral-1	Spherical	184
<b>L33</b> Packing having the capacity to separate proteins of 4,000 to 400,000 daltons. It is spherical, silica-based and processed to provide pH stability.	BioSep-SEC-S2000	Spherical	95
	BioSep-SEC-S3000	Spherical	95
<b>L34</b> Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, about 9 µm in diameter.	Rezex RPM Monosaccharide	Spherical	210
<b>L35</b> A zirconium-stabilized spherical silica packing with a hydrophilic (diol-type) molecular monolayer bonded phase having a pore size of 150 Å.	(BioSep-SEC-S2000 may be used)	Spherical	95
<b>L36</b> 3,5-dinitrobenzoyl derivative of L-phenylglycine covalently bonded to 5 µm aminopropyl silica.	Nucleosil Chiral-3	Spherical	184
<b>L37</b> Polymethacrylate gel packing having the capacity to separate proteins by molecular size over a range of 2,000 to 40,000D.	PolySep-GFC-P3000	Spherical	204
	Shodex OHpak SB-803HQ	Spherical	224
<b>L38</b> Methacrylate-based size-exclusion packing for water-soluble samples.	PolySep-GFC-P1000	Spherical	204
	Shodex OHpak SB-802HQ	Spherical	224
<b>L39</b> Hydrophilic polyhydroxymethacrylate gel of totally porous spherical resin.	PolySep-GFC-P Series	Spherical	204
	Shodex OHpak SB-800HQ series	Spherical	224
	Shodex RSpak DM-614	Spherical	227
<b>L40</b> Cellulose tris-3,5-dimethylphenylcarbamate coated porous silica particles, 5 µm to 20 µm in diameter.			
<b>L41</b> Immobilized α-acid glycoprotein on spherical silica particles, 5 µm in diameter.			
<b>L42</b> Octylsilane and octadecylsilane groups chemically bonded to porous silica particles, 5 µm in diameter.			
<b>L43</b> Pentafluorophenyl groups chemically bonded to silica particles, 5 to 10 µm in diameter.	Curosil-PFP	Spherical	119
<b>L44</b> A multifunctional support, which consists of a high purity, 60 Å, spherical silica substrate that has been bonded with a cationic exchanger, sulfonic acid functionality in addition to a conventional reversed phase C8 functionality.			
<b>L45</b> Beta cyclodextrin bonded to porous silica particles, 5 to 10 µm in diameter	Shiseido Chiral CD-Ph	Spherical	107
	Nucleodex Beta-PM	Spherical	184
<b>L46</b> Polystyrene/divinylbenzene substrate agglomerated with quaternary amine functionalized latex beads, 10 µm in diameter.			
<b>L47</b> High capacity anion-exchange microporous substrate, fully functionalized with a trimethylamine group, 8 µm in diameter.			
<b>L48</b> Sulfonated, cross-linked polystyrene with an outer layer of submicron, porous, anion-exchange microbeads, 15 µm in diameter.			
<b>L49</b> A reversed-phase packing made by coating a thin layer of polybutadiene on to spherical porous zirconia particles, 3 to 10 µm in diameter.			
<b>L50</b> Multifunction resin with reversed-phase retention and strong anion-exchange functionalities. The resin consists of ethylvinylbenzene, 55 % cross-linked with divinylbenzene copolymer, 3 to 15 µm in diameter, and a surface area of not less than 350 m <sup>2</sup> /g, substrate is coated with quaternary ammonium functionalized latex particles consisting of styrene cross-linked with divinylbenzene.			
<b>L51</b> Amylose tris-3,5-dimethylphenylcarbamate-coated, porous, spherical, silica particles, 5 to 10 µm in diameter.			
<b>L52</b> A strong cation exchange resin made of porous silica with sulfopropyl groups, 5 to 10 µm in diameter.	TSKgel SP-2SW	Spherical	257
<b>L53</b> Weak cation-exchange resin consisting of ethylvinylbenzene, 55 % cross-linked with divinylbenzene copolymer, 3 to 15 µm diameter. Substrate is surface grafted with carboxylic acid and/or phosphoric acid functionalized monomers. Capacity not less than 500 µm in diameter.			
<b>L54</b> A size exclusion medium made of covalent bonding of dextran to highly cross-linked porous agarose beads, about 13 µm in diameter.			
<b>L55</b> A strong cation exchange resin made of porous silica coated with polybutadiene-maleic acid copolymer, about 5 µm in diameter.			
<b>L56</b> Isopropyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.	Zorbax SB C3	Spherical	270
<b>L57</b> A chiral-recognition protein, ovomucoid, chemically bonded to silica particles, about 5 µm in diameter, with a pore size of 120 angstroms.	Ultron ES-OVM	Spherical	272
<b>L58</b> Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the sodium form, about 7 to 11 µm diameter.	Rezex RNM-Carbohydrate	Spherical	210
<b>L59</b> To separate proteins by molecular weight over the range of 10 to 500 kDa. Spherical 10 µm, silica-based, and processed to provide hydrophilic characteristics and pH stability.	BioSep-SEC-S3000	Spherical	95
<b>L60</b> Spherical, porous silica gel, 3 to 10 µm in diameter, surface has been covalently modified with palmitamidopropyl groups and endcapped.			
<b>L61</b> Hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 13 µm microporous particles, pore size less than 10 Å, and consisting of ethylvinylbenzene cross-linked with 55 % divinylbenzene with a latex coating composed of 85 nm diameter microbeads bonded with alkanol quarternary ammonium ions (6 %).			
<b>L62</b> C30 silane bonded phase on a fully porous spherical silica, 3 to 15 µm in diameter.	Develosil Combi-RP	Spherical	120
	Develosil RP-Aqueous	Spherical	120
	Develosil RP-Aqueous-AR	Spherical	120